Minimum requirements for new TEM users in CEITEC Nano

The TEM TITAN is a state-of-the-art system requiring a certain level of experience in practical as well as theoretical sense, and therefore the training takes much longer time and requires much more effort from both the trainee and the trainer, than on the other instruments installed here.

The ideal trainee for Titan should have the following „profile“:

1. Having sufficient theoretical background in the observation and analytical techniques he/she is going to exploit on the TEM. [There are several imaging modes available, several analytical detectors etc., each requiring some minimum level of understanding in theoretical and practical sense. Mostly it is not possible to use only one imaging mode to achieve results and general understanding is demanded.]

2. *In case of an external user:* Having active practical experience in operation (not just sitting-in-front) of any TEM is mandatory. Such a person is actively and routinely (on a daily- or at least week-basis) using a simpler TEM in his/her home institute for routine work and only comes to use TITAN to do some advanced experiments. [The available TEM at home institute also assures a possibility to check a sample before coming for measurements on TITAN].
In case of internal user: Having active practical experience in operation (not just sitting-in-front) of any TEM is preferred. There can be allowed exception for a fresh TEM user, but he/she has to have very good practical experience and theoretical background in SEM and at least general theoretical background in TEM.

3. Every user should come to work on TITAN ideally at least once per month. [The key here is to develop and maintain the routine skills specific for operation of our TITAN].

4. The prospect for using the TEM shall be a long-term: two years is an absolute minimum. [It would be complete loss of time and effort to train a user that uses the TEM for less than a year – such a person would hardly start producing meaningful data at the end of his/her engagement].

5. Exploiting the TEM for his/her research is the key technique, i.e. he/she is a dedicated researcher for TEM analysis within the research group.
[Correctly obtaining and interpreting the TEM data often requires making literature survey, and sometimes to follow the trial-and-error route, that brings material or sample-specific knowledge. There may also arise needs to run some numerical simulations. Investing such an effort has to be justified and definitely not worth if the TEM is only a marginal technique for the research.]

6. Active publication of obtained results. [Ideally each set of measurements should produce a high quality data usable for later publication. Publication results are one of the main evaluation indicators of our infrastructure and support sustainable financing of expensive running costs of the TEM laboratory.]